

*Sub A*  
1. A warning system for a lift which is used in conjunction with a vehicle having an opening and a floor, the lift including a platform, the warning system comprising:

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- a. means for sensing a threshold zone adjacent to said vehicle opening and transmitting a threshold output signal when an object moves into the threshold zone;
  - b. means for determining the position of said platform and transmitting a position output signal; and
  - c. means for generating a warning signal based on the conditions of said threshold output signal and said position output signal;
  - d. whereby said warning system provides warning when an object moves into said threshold zone while said platform is in said unsafe level.

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2. The warning system in accordance with Claim 1 wherein said sensing means includes a sensor and a reflector, where the sensor emits an infrared beam to the reflector.

3. The warning system in accordance with Claim 2 wherein said infrared beam is modulated for the purposes of distinguishing the beam from ambient light.

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4. The warning system in accordance with Claim 1 wherein said sensing means comprises a passive infrared device.

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6. The warning system in accordance with Claim 5 wherein said passive infrared device comprises a motion sensor.

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7. The warning system in accordance with Claim 1 wherein said sensing means

comprises a radar reflection by HF radio waves.

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7. The warning system in accordance with Claim 1 wherein said sensing means comprises an ultrasonic reflection by ultrasonic sounds.

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9. The warning system in accordance with Claim 1 wherein said sensing means comprises pressure sensitive mat.

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10. The warning system in accordance with Claim 1 wherein said sensing means comprises pressure sensitive strip.

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11. The warning system in accordance with Claim 1 wherein said sensing means comprises pressure sensitive bladder.

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12. The warning system in accordance with Claim 1 wherein the condition of said threshold output signal transmitted by said sensing means changes when said sensing means senses an object crossing a boundary of said threshold zone.

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13. The warning system in accordance with Claim 1 wherein said means for determining the position of said platform transmits said platform output signal when said platform is in an unsafe level.

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14. The warning system in accordance with Claim 1 wherein said means for determining the position of said platform stops transmitting said platform output signal when said platform is in an unsafe level.

14 15. The warning system in accordance with Claim 1 wherein the condition of said platform output signal transmitted by said means for determining the position of said platform changes when the position of said platform changes between an unsafe level and a safe level.

15 16. The warning system in accordance with Claim 1 wherein said warning means is an audio warning device.

16 17. The warning system in accordance with Claim 1 wherein said warning means is a visual warning device.

17 18. The warning system in accordance with Claim 1 wherein said unsafe level is a platform position which is lower than an entry level position at said vehicle opening.

18 19. The warning system in accordance with Claim 1 wherein said threshold zone has a depth of a pre-defined safe distance.

19 20. The warning system in accordance with Claim 19 wherein said pre-defined safe distance is not less than eighteen (18) inches.

20 21. A threshold warning system for a lift which is used in conjunction with a vehicle having an opening and a floor, the lift including a mounting assembly being mounted on the vehicle floor adjacent to the vehicle opening, an actuating system mounted on the mounting assembly, a platform assembly, and a linking assembly connecting to the actuating system and the platform assembly for moving the

platform assembly between an entry level position and a ground level position outside the vehicle and inversely, the threshold warning system comprising:

- a. a sensor means for emitting an infrared beam directly across said vehicle opening for sensing a threshold zone adjacent to said vehicle opening when an object moves into the threshold zone;
- b. a reflector means for mounting adjacent to said mounting assembly and remotely located from said sensor means, where said reflector means reflects said infrared beam back to said sensor means such that said infrared beam is uninterrupted;
- c. a cam assembly for determining the position of said platform assembly which switches a limit switch when said platform is in a unsafe level;
- d. a control means having a first input coupled to said limit switch for determining the condition of said limit switch, a second input coupled to said sensor means for determining the condition of said sensor means, and an output for transmitting an output signal based on the conditions of said limit switch and said sensor means;
- e. a warning means coupled to said output of said control means for receiving said unsafe output signal from said control means which in turn activates the warning means to indicate that said platform assembly is in said unsafe level and an object moves into said threshold zone;
- f. whereby said threshold warning system provides warning when an object moves into said threshold zone while said platform assembly is in said unsafe level.

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22. The threshold warning system in accordance with Claim 20 wherein said infrared beam is modulated for the purpose of distinguishing the beam from ambient light.

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23. The threshold warning system in accordance with Claim 21 wherein said cam assembly comprises a cam wheel which is located relative to said limit switch and rotates with the movement of said platform assembly.

<sup>20</sup>  
24. The threshold warning system in accordance with Claim 21 wherein said warning means is an audio warning device.

<sup>20</sup>  
25. The threshold warning system in accordance with Claim 21 wherein said warning means is a visual warning device.

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26. The warning system in accordance with Claim 21 wherein said unsafe level is a platform position which is lower than an entry level position at said vehicle opening.

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27. The warning system in accordance with Claim 21 wherein said threshold zone has a depth of a pre-defined safe distance.

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28. The warning system in accordance with Claim 27 wherein said pre-defined safe distance is not less than eighteen (18) inches.

<sup>26</sup>  
29. A wheelchair lift for use in conjunction with a vehicle having an opening and a floor, the wheelchair lift comprising:

- a. a mounting assembly mounted on said vehicle floor adjacent to said vehicle opening;
- b. an actuating system which is affixed to said mounting assembly and including at least one actuating means;

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- c. a platform assembly;
  - d. a linking assembly connecting to said actuating system and said platform assembly for moving said platform assembly between an entry level position and a ground level position outside said vehicle and inversely;
  - e. a warning system for providing warning when an object moves into a threshold zone while said platform assembly is in an unsafe level, the warning system including a sensor means, a reflector means, a warning means, a platform position indication means, and a control means:
    - (i) said sensor means arranged for emitting an infrared beam directly across said vehicle opening to said reflector means which is mounted remotely from said sensor means, where said reflector means reflects the infrared beam back to said sensor means such that the infrared beam is uninterrupted for sensing if an object moves into a threshold zone adjacent to said vehicle opening,
    - (ii) said platform position indication means arranged for determining the position of said platform assembly and comprising a cam wheel which is located relative to a limit switch and rotates with the movement of said platform assembly, wherein the cam wheel changes the condition of the limit switch when said platform assembly is in an unsafe level;
    - (iii) said control means having a first input coupled to said platform position indication means for receiving a platform signal, a second input coupled to said sensor means for receiving a threshold signal, and an output for transmitting an output signal based on the conditions of said platform signal and said threshold signal; and
    - (iv) said warning means coupled to said output of said control means

for receiving said output signal from said control means which in turn activates said warning means to indicate that an object moves into said threshold zone while said platform assembly is in said unsafe level;

- f. whereby said threshold warning system of said wheelchair lift provides warning when an object moves into said threshold zone while said platform assembly is in said unsafe level.

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30. The wheelchair lift in accordance with Claim <sup>26</sup>29 wherein said infrared beam is modulated for the purpose of distinguishing the beam from ambient light.

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31. The wheelchair lift in accordance with Claim <sup>26</sup>29 wherein said warning means is an audio warning device.

<sup>31</sup>  
32. The wheelchair lift in accordance with Claim <sup>26</sup>29 wherein said warning means is a visual warning device.

<sup>32</sup>  
33. The warning system in accordance with Claim <sup>26</sup>29 wherein said unsafe level is a platform position which is lower than an entry level position at said vehicle opening.

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34. The warning system in accordance with Claim <sup>26</sup>29 wherein said threshold zone has a depth of a pre-defined safe distance.

<sup>34</sup>  
35. The warning system in accordance with Claim <sup>33</sup>34 wherein said pre-defined safe distance is not less than eighteen (18) inches.